Calculus I　复习专题四　第五和六章　面积和旋转体积

1. (22年期末)(1) Find the area of the region enclosed by the curves $y = x^2 - 2x$, $y = 0$, $x = 1$, and $x = 3$.
(2) Find the volume of the solid generated by revolving the region in (1) about the y-axis.

2. (21年期末) Find the area of the surface generated by revolving the curve $4y = x^2 (1 \leq y \leq 3)$ about the y-axis.

3. (21年期中) The region is bounded by the x-axis, the curve $f(x) = \frac{\tan^2 x}{x}$, if $0 < x \leq \frac{\pi}{4}$; $f(x) = 0$, if $x = 0$, and the line $x = \frac{\pi}{4}$. Find the volume of the solid generated by revolving the region about the y-axis.

4. (20年期末) The region D is enclosed by the curve $y = \ln\sqrt{x-1}$, the straight line $x = 5$, and the x-axis.
(1) Find the area of the region D.
(2) Find the volumes generated by revolving the region D about the line $x = 5$.

5. (19年期末) The graph of the equation $x^{\frac{2}{3}} + y^{\frac{2}{3}} = 1$ is an astroid. Find the area of the surface generated by revolving the curve about the x-axis.

6. (19年期末) Find the area of the region enclosed by the curve $y = |x^2 - 4|$ and $y = \frac{x^2}{2} + 4$.